

# Elanco Fundamentals of Animal Science

## Certification Review - Student Notes

*Directions:*

Fill in the blanks.

### ***The Livestock Industry Segment***

#### **1. Key Objectives**

- Analyze the growth and development of the livestock industry as a \_\_\_\_\_ commodity
- Examine the stages of animal growth and relate it to market readiness
- Evaluate marketing practices for \_\_\_\_\_, meat and meat products
- Explore career development and entrepreneurship opportunities

#### **2. The Evolution of Livestock**

- The first livestock animals, such as sheep, horses and cattle, were brought over to America in \_\_\_\_\_ during Christopher Columbus's second journey to the New World
- After their introduction, animals, mainly cattle, were allowed to roam and graze \_\_\_\_\_ making them susceptible to predator attacks

#### **3. The Evolution of Livestock**

- Early human civilizations were dependent upon \_\_\_\_\_ the animals for food and clothing
- \_\_\_\_\_ the animals in a confined area allowed for a more stable supply of food and clothing

#### **4. Origins of Livestock**

- The cattle we are familiar with today are ancestors of the *Bos taurus* and the *Bos indicus* (\_\_\_\_\_ cattle).
- The common American breeds of swine today are ancestors of the European wild \_\_\_\_\_ *Sus scrofa* and the East Indian pig *Sus vittatus*

#### **5. Origins of Livestock**

- The use of swine for meat did not occur until the New Stone Age
- \_\_\_\_\_ were the first livestock animals to be tamed by humans
- There are more than \_\_\_\_\_ of sheep in the world today

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### 6. Origins of Livestock

- Present day sheep came from wild sheep called \_\_\_\_\_ and Asiatic Uria
- The only sheep native to North America are the Big Horn or Rocky Mountain Sheep
- Goats were imported from \_\_\_\_\_ and were mainly used for their mohair and milk
- Goats are decedents from Pasan or Grecian Ibex

### 7. Origins of Livestock

- Horses are native to North America but disappeared before Europeans came to the New World; Christopher Columbus reintroduced horses during his second journey
- Chickens originated from the \_\_\_\_\_ and were brought to the New World by the early colonist and explorers
- Today, the \_\_\_\_\_ industry is vertically integrated

Vertical integration is a management approach in which supply chains are united through a single owner.

### 8. Then & Now

- Instead of slaughtering animals on an \_\_\_\_\_ basis, animals began to be slaughtered in excess during the \_\_\_\_\_ months
  - As animals began to be managed closely, the quality of health improved
- Domestication is the adaptation of animals for the advantage of humans through breeding and captivity.

### 9. Then & Now

- Scientific advancements such as artificial \_\_\_\_\_, embryo transfer and ear implants have revolutionized the livestock industry
- Concentrated Animal Feeding Operations or CAFO's are large facilities which raise animals in a \_\_\_\_\_ area and provide management over the animals such as feeding, cleaning the environment and taking care of animal health

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### 10. Marketing Livestock

- Fairs and shows began to allow producers to sell and “show off” their animals
- Slaughter cattle are evaluated on their yield (\_\_\_\_\_) and quality grades
- Slaughter lambs are evaluated by yield grade
- Grades for pork carcasses are determined by taking a \_\_\_\_\_ measurement

### 11. Marketing Livestock

- Each species receives its own \_\_\_\_\_, which establishes a set price for each grade
- Besides meat, \_\_\_\_\_ provides fiber and clothing

### 12. Marketing Livestock

- Animal by-products are valuable to society and can be used to create the following:
  - perfume
  - \_\_\_\_\_
  - glycerine
  - vaccinations/medicine

Rendering is the process of converting animal tissue into value-added material. Fat rendered from pork carcasses is known as \_\_\_\_\_. Fat rendered from beef carcasses is known as tallow and is used to make soap and lubricants.

### ***Basic Animal Science Segment***

#### **1. Key Objectives**

- Understand the important role animals play in everyday life
- Compare and contrast \_\_\_\_\_ systems, gestation periods and animal uses for various livestock species
- Understand common \_\_\_\_\_ associated with cattle, horses, sheep, goats, swine and poultry

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### 2. Reproduction

- Is vital for all species to survive
- Begins with natural mating, but can also be accomplished via \_\_\_\_\_ insemination (AI)
  - AI is the primary breeding method for dairy cows, turkeys and pigs
- In mammals, the \_\_\_\_\_ develops as a fetus inside the animal until parturition
  - parturition is the process of giving birth

### 3. Reproduction

- In \_\_\_\_\_, the embryo first develops within the animal and continues development within an \_\_\_\_\_ where it later hatches

### 4. Gestation Period

- Is the length of time from conception to birth
  - conception is the process of becoming pregnant involving fertilization
- Varies among species
  - cow – 283 days
  - mare – \_\_\_\_\_
  - sow – 114 days
  - ewe – 147 days
  - goat – 150 days
  - chicken – \_\_\_\_\_

### 5. Colostrum

- Is a mother's first \_\_\_\_\_
- Is important for newborns to consume immediately after birth as it contains vitamins, minerals and antibodies needed to stay healthy
  - mothers will produce " \_\_\_\_\_ " milk one to two days after giving birth

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### 6. Common Cattle Terms

Term	Meaning
<input type="text"/>	Cattle under one year of age
Bull	An uncastrated male
Steer	A castrated male
Heifer	A female which has not had a calf
Cow	A female which has had a calf
Calving	Term used for parturition in cattle; process of giving birth
<input type="text"/>	Removal of calves from mother's milk

### 7. Common Horse Terms

Term	Meaning
Colt	An uncastrated male younger than four years of age
<input type="text"/>	An uncastrated male at least four years of age
Gelding	A castrated male horse
Filly	A female younger than four years of age
<input type="text"/>	A female at least four years of age
Foaling	Term used for parturition in horses; process of giving birth
Foal	A colt, gelding or filly up to one year of age

### 8. Common Sheep & Goat Terms

Term	Meaning
Lamb	A sheep younger than one year of age; regardless of male or female
Lambing	Term used for parturition in sheep; process of giving birth
<input type="text"/>	An uncastrated male sheep
Wether	A castrated male sheep or goat
Ewe	A female sheep; regardless of parturition status
Doe	A female goat; regardless of parturition status
Buck	An uncastrated male goat
<input type="text"/>	A goat younger than one year of age; regardless of male or female
Yearling	A goat between one and two years of age; regardless of male or female

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### 9. Common Swine Terms

Term	Meaning
Pig	A pig weighing less than 130 lbs.; regardless of male or female
Hog	A pig weighing more than 130 lbs.; regardless of male or female
<input type="text"/>	An uncastrated male
Barrow	A castrated male
Sow	A female which has had a litter of piglets
<input type="text"/>	A female which has not had a litter of piglets
Farrowing	Term used for parturition in swine; process of giving birth

### 10. Common Chicken Terms

Term	Meaning
Hen	A female which lays eggs
Broiler/ Fryer	A chicken between six and eight weeks of age; regardless of male or female
<input type="text"/>	A young, immature female which has not reached the onset of egg production and is not more than one year of age
Rooster	An uncastrated male at least eight months of age
<input type="text"/>	A castrated male

Chickens are NOT considered an ungulate.

### ***External Anatomy of Livestock: Terms & Terminology Segment***

#### **1. Key Objectives**

- Identify the external anatomy of livestock species
- Analyze the \_\_\_\_\_ of the external anatomy of livestock species
- \_\_\_\_\_ the external anatomy of various livestock species

#### **2. Anatomical Terms of Location**

- Dorsal– refers to the back of the body (highest point of most four-legged animals)
- \_\_\_\_\_ – refers to the belly or underside of the body
- Caudal– toward or near the tail of the body
- \_\_\_\_\_ – toward or near the head of the body

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### 3. Anatomical Terms of Location

- \_\_\_\_\_ – refers to a structure nearest a point of reference (e.g., the knee is proximal to the ankle)
- \_\_\_\_\_ – refers to the end farthest from a point of reference (e.g., the ankle is distal to the knee)

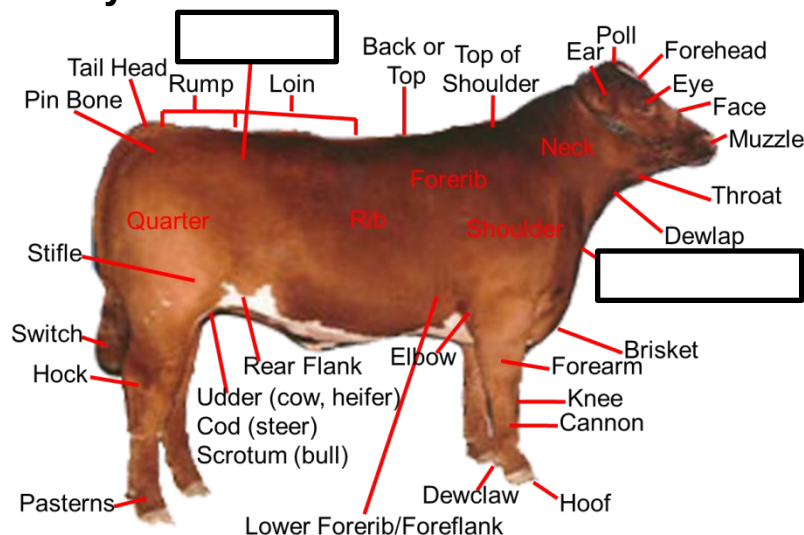
### 4. External Components of Livestock

- \_\_\_\_\_ system– structure which covers and protects the body (i.e., skin structure, hair and nails)
- Epidermis–is the outer layer of cells which forms the skin, contains melanin and acts as a barrier of water loss
- Dermis– is the part of the skin which houses hair follicles, nerve endings and regulates temperature
- \_\_\_\_\_ – two external openings of the nose which lead to the nasal cavity
- The part of the skin which houses hair follicles is called the dermis.

### 5. External Components of Livestock

- \_\_\_\_\_ – long or stiff hairs on the face or nostrils of an animal (i.e., whiskers)
- Mammary \_\_\_\_\_ – openings which lead to the mammary glands (i.e., teat)

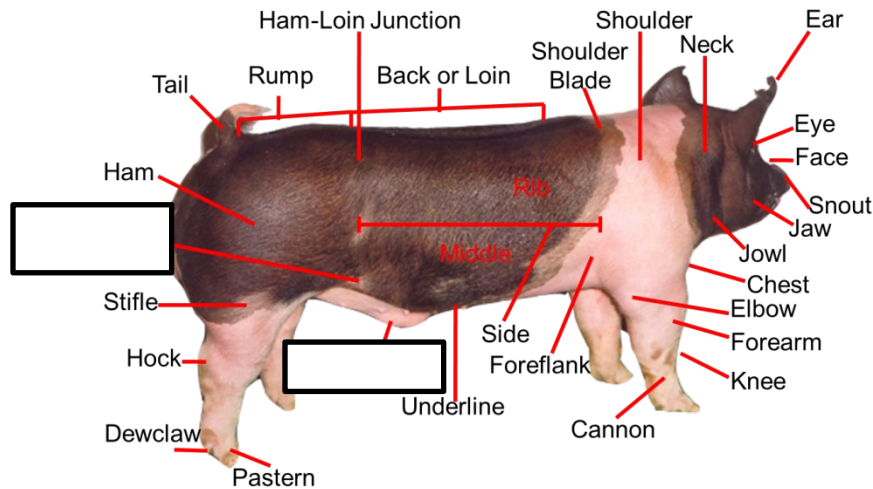
### 6. External Anatomy - Cattle



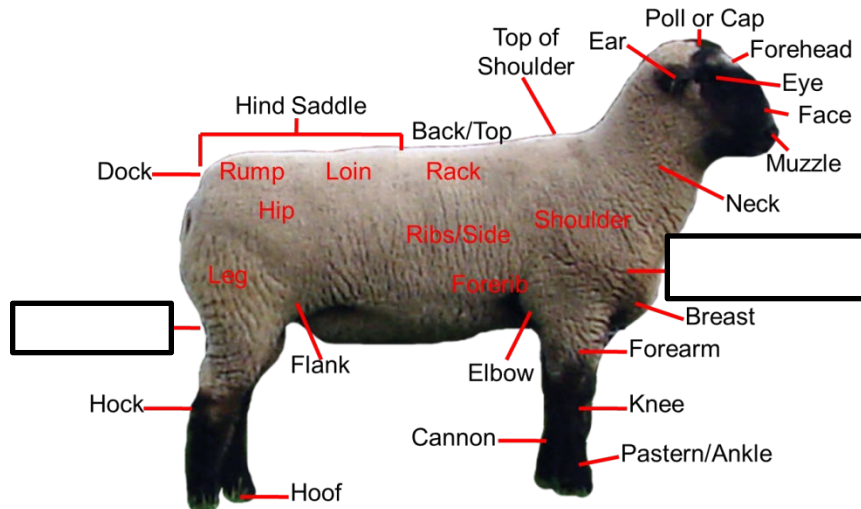
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### 7. External Anatomy - Swine



### 8. External Anatomy - Sheep

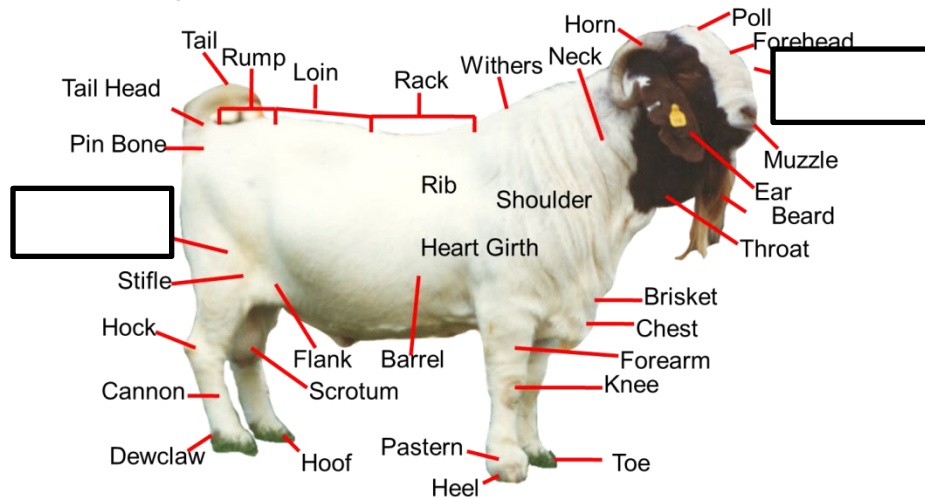




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### 9. External Anatomy - Goat



### ***Digestive Systems of Livestock: A Basic Look Segment***

#### **1. Key Objectives**

- Understand digestive systems of \_\_\_\_\_ and ruminant animals
- Identify organs which make up the digestive systems of various species of livestock
- Understand \_\_\_\_\_ structures and functions of the digestive systems of various species of livestock

#### **2. Prehension**

- Is the way in which an animal gathers food
- Organs vary by species
  - human– \_\_\_\_\_
  - horse– lips
  - cow– tongue
  - sheep/goat– \_\_\_\_\_ and lips
  - chicken– beak

#### **3. Mastication**

- Is the process of \_\_\_\_\_
- Varies by species \_\_\_\_\_
  - horse– upper and lower teeth
  - cow/sheep/goat– lower teeth and dental \_\_\_\_\_

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### 4. Ruminant

- Is an animal with a multiple compartment \_\_\_\_\_
- Examples include:
  - \_\_\_\_\_
  - sheep
  - goats

### 5. Ruminant Stomachs

- Are comprised of four compartments which include:
  - omasum
  - \_\_\_\_\_
  - reticulum
  - rumen

In young ruminant animals, a reticular groove is formed by the \_\_\_\_\_ fold of the reticulum allowing milk to travel directly from the mouth to the abomasum.

### 6. Ruminant Digestive Tract

- Includes:
  - esophagus
  - rumen
  - \_\_\_\_\_
  - omasum
  - abomasum (\_\_\_\_\_)
  - small intestine
  - cecum
  - large intestine
  - rectum

### 7. Monogastric

- Is an animal with a simple stomach
- Examples include:
  - horses
  - \_\_\_\_\_
  - poultry

The gizzard is a highly muscular organ found in chickens used for grinding up food.

Colic is a digestive disorder \_\_\_\_\_ in horses. Overfeeding grains is the cause for most digestive disturbances in horses.